Part B: High Rate Land Treatment of Wastewater

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9. Rapid Infiltration Land Application Permitting Guidance

In 1996, the *Interpretive Supplement* was published within a comprehensive guidance document entitled *Handbook for Land Application of Municipal and Industrial Wastewater*. Guidelines were established for slow rate land application systems. Rapid infiltration (RI) systems are allowed under the *Wastewater Land Application Rules*, but with the promulgation of the *Ground Water Quality Rule* and other technical questions, additional guidance is needed to assist permit writers and the regulated community in understanding criteria for designing and permitting rapid infiltration systems.

9.1 Guidance and Regulations for Rapid Infiltration

EPA identified rapid infiltration systems in the mid-70s, as effective alternative treatment for municipal wastewater. Design criteria and methods are presented in the U. S. Environmental Protection Agency (EPA) documents, *Process Design Manual: Land Treatment of Municipal Wastewater*, 1981, and *Process Design Manual: Land Treatment of Municipal Wastewater*, *Supplement on Rapid Infiltration and Overland Flow, 1984*. These documents have generally been applied in designs for Idaho rapid infiltration systems.

From the *Wastewater-Land Application Permit Rules* (IDAPA 58.01.17), Rapid Infiltration Systems are to be permitted:

- 200.15. Definition: Rapid Infiltration System. A wastewater treatment method by which wastewater is applied to land in an amount of twenty (20) to six hundred (600) feet per year for percolation through the soil. Vegetation is not generally utilized by this method. (4-1-88)
- 600.06. Rapid Infiltration Systems. The following minimum treatment requirements are established for land application of wastewater. (4-1-88)

  a. Suspended solids content of wastewater, which includes organic and inorganic particulate matter shall not exceed a thirty (30) day average concentration of one hundred (100) mg/l. (4-1-88)

  b. Nitrogen (total as N) content of wastewater shall not exceed a thirty (30) day average concentration of twenty (20) mg/l. (4-1-88)

9.2 Site Specific Permitting Considerations

There are three (3) ground water/surface water scenarios encountered when considering the regulation of rapid infiltration systems.

Scenario 1: Rapid infiltration systems having surface water impacts only. These systems are generally found very close to natural surface waters. Any local ground water discharges to the surface water entirely. There are no ground water uses between the basin and the receiving water. *Water Quality Standards and Wastewater Treatment Requirements*, IDAPA 58.01.02, apply. A *National Pollutant Discharge Elimination System* (NPDES) permit would be the most appropriate permitting mechanism. If EPA is unable or unwilling to issue a NPDES permit, a *Wastewater Land Application Permit* should be issued that adequately protects the surface water. Consideration should be given to surface water monitoring upstream and downstream for parameters of concern, vadose zone monitoring to determine degree of treatment, and monitoring the wastewater as it enters the basin.

Scenario 2: Rapid Infiltration systems having ground water impacts only. Most ground water eventually discharges to surface water, however, if the affected surface water is more than 1,320 feet from the rapid infiltration system, the system would be assumed to have ground water influences only and be included in this scenario. Additionally, if there is any diversion or reasonable potential diversion of the ground water, it would be included in this scenario. In this case, the *Ground Water Quality Rule*, IDAPA 58.01.11, governs the impacts to the ground water. A Wastewater Land Application Permit should be issued. Ground water monitoring wells are required to determine impacts.

Scenario 3: Rapid Infiltration systems impacting both ground water and surface water. In this scenario it may be necessary to issue an NPDES permit and a Wastewater Land Application Permit. Elements of Scenario 1 and Scenario 2 would be incorporated into the Wastewater Land Application Permit and NPDES permits. If EPA issues an NPDES permit, it may be possible to include monitoring and permit limits for ground water concerns in the NPDES permit.

Existing facilities: Certain existing facilities that have NPDES permits were not required to obtain a Wastewater Land Application Permit. These facilities should be evaluated to determine which Scenario would be appropriate. If they are determined to be Scenario 1, DEQ will rely on the NPDES Permit process. Most likely these facilities would not be Scenario 2 since an NPDES permit presumes some surface water impact, but they might fall into the Scenario 3 scenario. If this is the case, the facility is required to obtain a Wastewater Land Application Permit unless the NPDES permit can be modified to satisfy wastewater land application issues. Since there is some time required for application preparation, permit processing, and construction, a consent order may be the appropriate mechanism to enable the facility to evaluate their situation and comply with the regulations. The Director may issue a waiver to the facility to exempt them from obtaining a Wastewater Land Application Permit, as provided in the Act.

9.3 References

Environmental Protection Agency. October 1981. Process Design Manual - Land Treatment of Municipal Wastewater, 625/1-81-013.

Environmental Protection Agency. October 1984. EPA Process Design Manual; Land Treatment of Municipal Wastewater - Supplement on Rapid Infiltration and Overland Flow. EPA 625/1-81-013a.

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